WINTER WEATHER AWARENESS

A Campaign by the National Weather Service and Tennessee Emergency Management Agency

Tennessee November 15-19, 2010

Winter is almost here. Hazardous weather can strike with little notice. Along with winter weather, tornadoes can also occur during the winter season with unwanted regularity. Eight years ago, Tennesseans experienced the secondary severe weather maximum at its worst with the Veterans Day Tornado outbreak. Severe thunderstorms with downburst winds and large hail occur even more frequently. Flooding and flash flooding can also occur with more frequency in the winter months.

The National Weather Service and State and local emergency management agencies across Tennessee would like to bring another weather threat to the forefront and heighten everyone's awareness of this significant weather threat – Winter Weather.

Last winter was colder and more snowy with several small snow events and also several significant snow events, especially across the southern Appalachians.

The winters the past few years have been usually mild across the region and lulled everyone into a feeling that those were what a "Normal" winter is like. The Christmas Eve 1998 ice storm caused over 17 million dollars of damage and widespread transportation problems. The winter of 95-96 saw many areas of the Southeastern U.S. experiencing a number of very heavy snow and ice storms. Heavy snow or ice can trap people in their homes or automobiles. People are inconvenienced, injured or even killed.

Even without snow or ice, intense cold can injure or kill before a person is aware they are at risk. Fatalities from hypothermia have occurred in air temperatures of 40-50 degrees. Persons with certain chronic health conditions and those over 65 are more at risk for hypothermia, **even within the home.**

One hazard we do not often associate with winter is flooding. Floods occur when too much rain or melted snow fill river or creek basins too quickly. Along Tennessee's rivers and streams, flooding is a natural part of life and most common during winter and early spring. Frozen ground, sparse vegetation, and less evaporation are all factors that allow water to run off the land and reach the rivers quickly during the cold months.

The National Weather Service in Morristown and the Tennessee State Emergency management Agency will highlight November 15th-19th to bring these hazards to the attention of the public. We will be sending information through our communications network including the National Weather Service's NOAA Weather Radio during this period. We hope you will all join in this effort to make this the safest winter possible.

From the Meteorologist in Charge—George Mathews

Hi again! It can't already be this close to Christmas again can it??? Yes, Winter is on the way and we at the National Weather Service are preparing for it. Each year our Science and Operations Officer, SOO, David Hotz brews up some training for us. Many of you may not realize it, but we have one computer system that is dedicated to training and we can actually play back old events in which the data peels in just like in real time. This system is called the Warning Event Simulator (WES). We've had the WES for several years now and it is invaluable in letting us practice forecasting a real event from a few years ago. In previous years we would almost depend on the first few events to be a limited event to get our knob-ology warmed up before a bigger system headed our way. With the event simulator we've all been able to train since September to get reacquainted with our Winter Weather forecasting.

One important note that I don't think I've ever passed along deals with flooding. Winter here is a prime time for flooding in our area—see the flood safety section in this publication. I've seen some drainage ditches recently that have a very thick growth of weeds and brush in them. I'm not talking about a 2-3 foot wide ditch, rather I'm talking about 12-15 foot wide ditches that are supposed to move a lot of water—choked with weeds. Of course, these ditches are thoroughfares, not only to relieve water in the surrounding lands, but also to get the water out of the local area and into a larger body that can better handle a large volume of water. If ditches like these remain choked full of vegetation, it could lead to serious problems either from slowing the evacuation of the water. If the vegetation is dislodged, it will eventually get caught on something and start damming the flow. I would encourage each of you to try to make sure these ditches are attended to. Just like power companies trimming threatening trees this time of year, I think it would be a good practice to have vegetation removed from ditches. It could really lessen the flooding threat in that area. Easy for me to say, huh!—won't be me down in the ditch. J I hope you know where I'm coming from here—it's a very easy thing to overlook, and it could make a big difference if

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Know the Threat!!

Snow and Freezing Rain

Heavy snow and/or freezing ran can immobilize a region and paralyze a city. Accumulations of snow can collapse buildings and knock down trees and power lines. Rural areas may be isolated for days. It is recommended that each household have provisions and the ability to remain self-sufficient for at least 3 days without power, or help, as it may take this long to reopen main roads and reestablish vital services.

Wind Chill

Wind Chill is based on the rate of heat loss from exposed skin caused by the combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill. The biggest question that always comes up with wind chill is, does it affect water pipes and car radiators. The answer is no, the accelerated loss of heat occurs on exposed skin only.

Hypothermia

Warning Signs

Uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion.

Detection

Take the person's temperature. If below 95 degrees F, immediately seek medical care. This is a life threatening situation. If care is not immediately available, begin warming the person slowly. Warm the core first. Get the person into warm clothing and wrap them in a warm blanket covering the head and neck. Do not give the person alcohol, drugs, coffee, or any very hot beverage or food, warm broth is better. Do not warm the extremities first, this drives cold blood toward the heart and may cause heart failure.

Frostbite

Frostbite is damage to body tissue caused by the tissue being frozen. Frostbite causes the loss of feeling and a white or pale appearance in extremities, such as fingers, toes, earlobes, or the tip of the nose. If symptoms are detected, get medical help IMMEDIATELY. If you must wait for help, slowly re-warm affected areas. If the person is also showing signs of hypothermia, warm the body core before the extremities.

Flooding

Winter is approaching and in addition to being cold and possibly snowy, it's also the flood season. Leaves are beginning to fall off the trees, and the ground will either freeze or potentially become substantially wet. Leaves trap rain and regulate the rater at which it hits the ground and sinks in. Less leaves = more rain hitting the ground faster. Wet or frozen soils can hold much less water than dry ones, and so more water hitting the ground means more runoff, instead of percolating down into the water table. More runoff = more flooding.

The summer and fall of 2010 has been slightly drier than normal. The overall rainfall for the year 2010 to date has been below normal over most of the area. . The outlook for ther rest of autumn and early winter flooding is for a near to slightly above normal potential.

Rules of safety in rain events are:

- Keep an eye on bodies of water at all times
- Pay attention to the weather where you are AND upstream from you
- NEVER drive through water running over the road
- Even after the rain, flooding may have secretly undermined roads beds

If you come to a closed or flooded road, TURN AROUND! DON'T DROWN! Don't make law enforcement officials have to go looking for you next of kin.

Before the Storm—Know the Terms

A **Winter Weather Advisory** is issued when ice or snow is expected to hinder travel, but conditions are not serious enough to require warnings.

Freezing rain is forecast when expected rain is likely to freeze as soon as it strikes the ground, potentially creating a coat of ice on roads and walkways. Sleet consists of small particles of ice mixed with rain. Sleet causes roads to freeze and become slippery.

A **Winter Storm Watch** means that severe winter weather is possible within the next day or two.

A **Winter Storm Warning** means that severe winter weather conditions are expected within the next 24 hours. A blizzard warning means that heavy snow and winds of 35 mph or more are expected.

Be Prepared – Keep a battery powered radio and flashlights in working order, stock extra batteries.

Before the Storm—Preparations

Be Prepared – Keep a battery powered radio and flashlights in working order, stock extra batteries.

Store drinking water and have food that can be prepared without an electric or gas stove. Stock emergency water and cooking supplies. Have candles and matches available in case of a power outage. Be careful how you use them.

Be certain that needed medications are available.

Be Prepared for isolation at home – Make sure you have sufficient heating fuel; regular fuel sources may be cut off. Have some kind of emergency heating equipment and fuel so that you can keep at least one room warn, but do NOT use a gas fired grill inside the home. Take measures to protect plumbing from freezing. Contact local utilities for winter tips.

Keep your car or truck "winterized" - Winterizing includes being certain about antifreeze protection levels and use a gasoline additive to reduce gasoline freezing. Carry a "Winter Car Kit" that includes high energy foods, a windshield scraper, flashlight, tow rope or chain, shovel, tire chains, blanket, bag of sand or salt, fluorescent distress flag and an emergency flare – all in case you're trapped in your vehicle by a winter storm. Keep extra gloves, mittens, hats, earmuffs and outerwear in the vehicle throughout the winter.

During the Storm

Stay Informed – Listen to radio or television for updates on weather conditions. With early warning, you may avoid being caught in the storm, or at least be better prepared to cope with it.

Dress for the season : Avoid getting wet – Many layers of thin clothing are warmer than a single layer of thick clothing. Mittens are warmer than gloves. Wear a hat; most body heat is lost through the top of the head. Cover your mouth to protect lungs; don't directly inhale extremely cold air.

Overexertion can bring on a heart attack – a major cause of death during and after winter storms – If shoveling snow isn't critical, don't do it. If you must shovel, don't overexert yourself.

If you are isolated at home – Conserve fuel by keeping your house cooler than usual and by "closing off" heat to some rooms. When kerosene heaters are used, maintain ventilation to avoid toxic fumes. Use only the fuel recommended by the manufacturer and follow operating instructions. Use a carbon-monoxide detector/ alarm and a smoke alarm.

Do Not Drive into Worsening Conditions – If you must travel, take winter driving seriously. Travel by daylight, and keep others informed of your schedule. Drive with extreme caution. Never try to save time by driving fast or by using back-road shortcuts.

If a Blizzard traps you in your vehicle – Pull off the highway, stay calm and remain in your vehicle where rescuers are most likely to find you. Set your directional lights to "flashing" and hang a cloth or distress flag from the radio antenna or window.

Do not set out on foot unless you can see a building close by where you know you can take shelter. Be careful: distances are distorted by blowing snow. A building may seem close, but actually may be too far away to walk to in deep snow.

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Trapped in a Vehicle

If you run the engine to keep warm, open a window slightly for ventilation. This will help protect you from possible carbon monoxide poisoning. Periodically clear away snow from the exhaust pipe.

Exercise to maintain body heat, but avoid overexertion. In extreme cold, use road maps, seat covers, and floor mats for insulation. Huddle with passengers and use your coats as blankets.

Never let everyone in the car sleep at one time. One person should always be awake to look out for rescue crews.

Be careful not to use up all battery power. Balance electrical energy needs – the use of lights, heat and radio with supply. At night, turn on the inside dome light, so work crews can spot you.

If in a remote area:

Spread a large cloth or the vehicle floor mats on the snow to attract rescue personnel who may be surveying the area from above. Once the blizzard passes, you may need to leave the car and proceed on foot to better shelter.

Keeping in Touch After any disaster, friends, relatives, insurance adjusters, etc. may need to locate you and your family. The following tips may reduce the confusion associated with making contact:

Evacuations

(1) Before evacuating your home, establish a contact person (and phone number) out of the potential disaster area where friends and relatives should "check-in" with each other.

(2) When you evacuate, consider leaving a note, securely attached to the front door, telling where you can be reached – but only if you have reason to believe someone might come looking for you.

(3) If widespread damage occurs, insurance adjusters or others might have trouble identifying your home or finding you. After the danger is over, therefore, consider spray painting the following information somewhere that is highly visible: Name, address, insurance company, policy number and contact number

	December	January	February	Season
Bristol				
Normal High Temp	47.8	44.1	48.9	46.9
Normal Low Temps	26.8	24.3	27.0	26.0
Normal Temperatures	37.3	34.2	38.0	36.5
Normal Precipitation	3.39	3.52	3.40	10.31
Normal Snowfall	2.2	5.5	4.1	11.8
Knoxville				
Normal High Temperature	49.8	46.3	51.7	49.3
Normal Low Temperature	31.9	28.9	31.8	30.9
Normal Temperature	40.9	37.6	41.8	40.1
Normal Precipitation	4.49	4.57	4.01	13.07
Normal Snowfall	0.7	3.7	3.0	7.4
Chattanooga				
Normal High Temperature	52.0	48.8	54.1	51.6
Normal Low Temperature	32.7	29.9	32.6	31.7
Normal Temperature	42.4	39.4	43.4	41.7
Normal Precipitation	4.81	5.40	4.85	15.06
Normal Snowfall	0.1	2.0	1.3	3.4
Nashville				
Normal High Temperature	50.4	46.5	52.1	49.7
Normal Low Temperature	31.8	28.2	31.4	30.5
Normal Temperature	41.1	37.4	41.8	40.1
Normal Precipitation	4.54	3.97	3.65	12.16
Normal Snowfall	0.5	3.6	3.1	8.2
Memphis				
Normal High Temperature	52.2	48.7	54.6	51.8
Normal Low Temperature	35.2	31.9	35.6	34.2
Normal Temperature	43.7	40.3	45.2	43.1
Normal Precipitation	5.68	4.24	4.31	4.74
Normal Snowfall	0.2	2.2	1.1	3.5

Records

All Time Cold Temperatures

Chattanooga	-10	Feb 13, 1899, 1/31/1966 1/21/1985
Knoxville	-24	Jan 21, 1985
Tri-Cities	-21	Jan 21, 1985
Nashville	-17	Jan. 21, 1985
Memphis	-13	Dec 24, 1963

Coldest Average Winter

Chattanooga	34.8	1962-63
Knoxville	34.2	1963-64
Tri-Cities	30.0	1976-77, 1977-78
Nashville	31.8	1977-78
Memphis	37.5	1977-78

Coldest Monthly Average

	Dec		Jan		Feb	
Chattanooga	34.3	1917	28.5	1977	33.8	1895
Knoxville	29.2	1876	26.7	1940	30.5	1895
Tri-Cities	27.8	1963	22.1	1977	28.1	1958
Nashville	29.5	1989	24.5	1977	29.2	1978
Memphis	31.4	1964	26.7	1940	34.0	1958

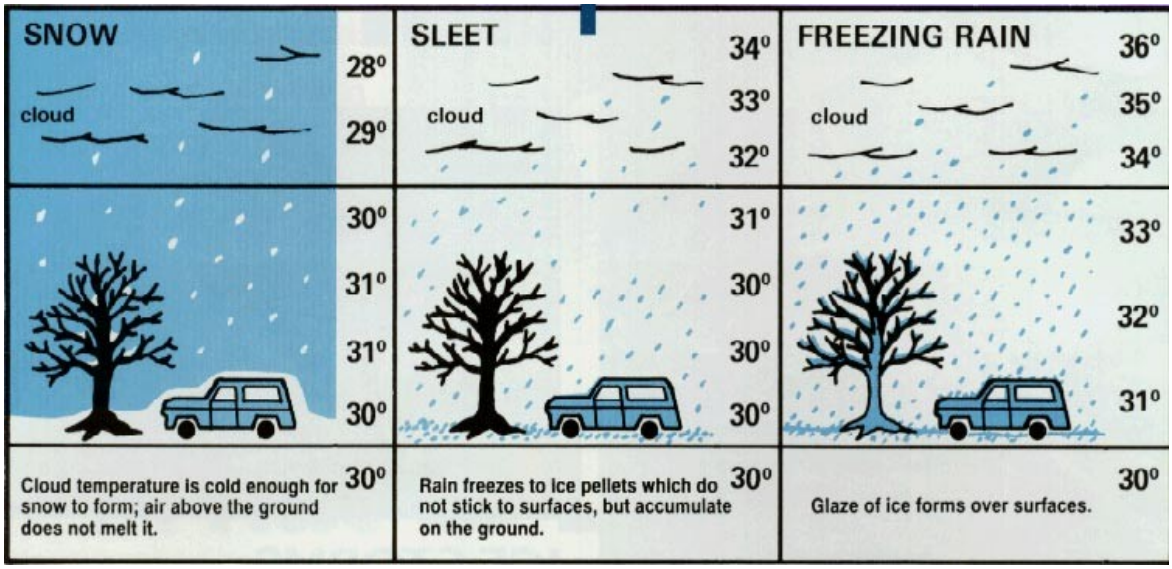
Snowfall

	Dec		Jan		Feb		Mar		Seasonal	
Chattanooga	14.8	1886	15.8	1893	17.3	1895	20.0	1993	23.9	1894-95
Knoxville	25.4	1886	15.1	1962	25.7	1895	20.2	1960	56.7	1959-60
Tri-Cities	12.9	1963	22.1	1966	20.4	1979	27.9	1960	51.0	1959-60
Nashville	13.2	1963	18.8	1948	18.9	1979	21.5	1892	38.5	1959-60
Memphis	14.3	1963	15.4	1948	10.3	1905	18.5	1882	25.1	1917-18

24 Hour Snowfall

Chattanooga	12.0	1886	10.2	1988	9.9	1912	20.0	1993
Knoxville	8.9	1969	12.0	1962	17.5	1960	14.1	1993
Tri-Cities	9.6	1969	13.0	1996	11.5	1996	14.2	1993
Nashville	10.2	1963	8.5	1905	15.0	1929	17.0	1892
Memphis	14.3	1963	11.8	1948	9.6	1886	18.0	1882

Cloud Base



Snow

Flurries: Light snow falling for short durations. No accumulation or light dusting is all that is expected.

Showers: Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

Squalls: Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes region.

Blowing Snow: Wind driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground that is picked up by the wind.

Blizzard: Winds over 35 mph with snow and blowing snow reducing visibility to near zero.

Sleet

Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorist.

Freezing Rain

Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Even small accumulations of ice can cause a significant hazard.

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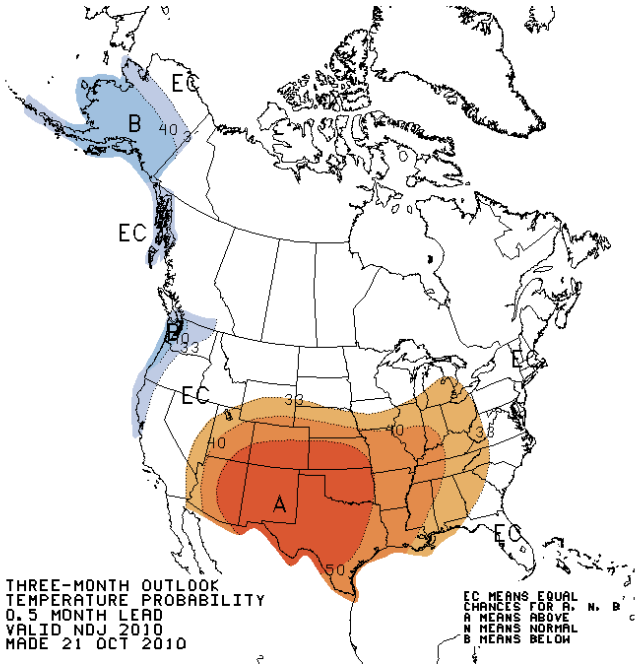
heavy rains move into your area. All right—back to the white stuff… Last year it seems like we finally had a real Winter—not just in the mountains, but everywhere in our 40 counties, we had interesting winter weather at one point or another. I had a real treat as I went *blizzard* chasing last year in Oklahoma around Christmas—lucky me, huh. It wasn't planned that way, but my in-laws live in Oklahoma and we got there last year just in time for my first bona fide blizzard (I lived in West Texas when the 1993 blizzard happened over here). This Oklahoma blizzard was a rip-roaring 7-8 inches of sideways snow. It was fascinating to watch it all unfold—I never had thought about it, but 60 mph winds break up the larger snowflakes into tiny flakes. When I initially saw the small flakes I thought, 'this isn't going to stack up very quickly with dinky little flakes like this'—wrong!—it was probably 2 inches per hour for a little while there—even heard a few claps of thunder.

One important item—even thought it was a horrific blizzard, the traveling to Oklahoma wasn't really that bad. Why not? Well, okay, it wasn't snowing when I was traveling—we ended up pushing our 14-15 hour trip into a one day trip and got there a day early, thereby missing the truly horrific travel conditions—there were stranded cars all over the place during the storm that we saw on the news. We just sat back on Christmas Eve and "Let it Snow, Let it Snow, Let it Snow"—didn't even lose power.

The reason I said this is an important item is that I made an informed decision—I changed my travel plans to completely avoid the dangerous weather. I haven't always been this fortunate—I remember back in my college days driving white-knuckled through about 400+ miles through a snowstorm—45 mph max! I hope to never do that again. In the holiday season, I can't overstate the need for flexibility in traveling, both in the timing of your travel and possibly the route you travel. I encourage you to keep your travel flexible—maybe even flexible to the point of cancelling a trip if it comes to it. Please pass this idea along—to keep travel plans as flexible as possible and to check out the expected weather on your route. You can check forecasts all along your route on the NWS web site at www.weather.gov .

I hope you all have a safe and happy holiday season—we look forward to working with all of you to keep the public safe and informed this Winter. Let us know how we can help!

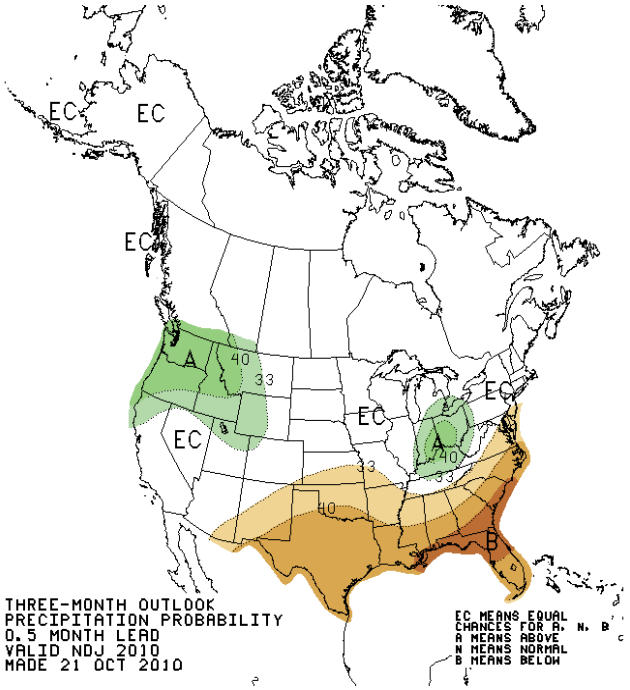
Winter Outlook



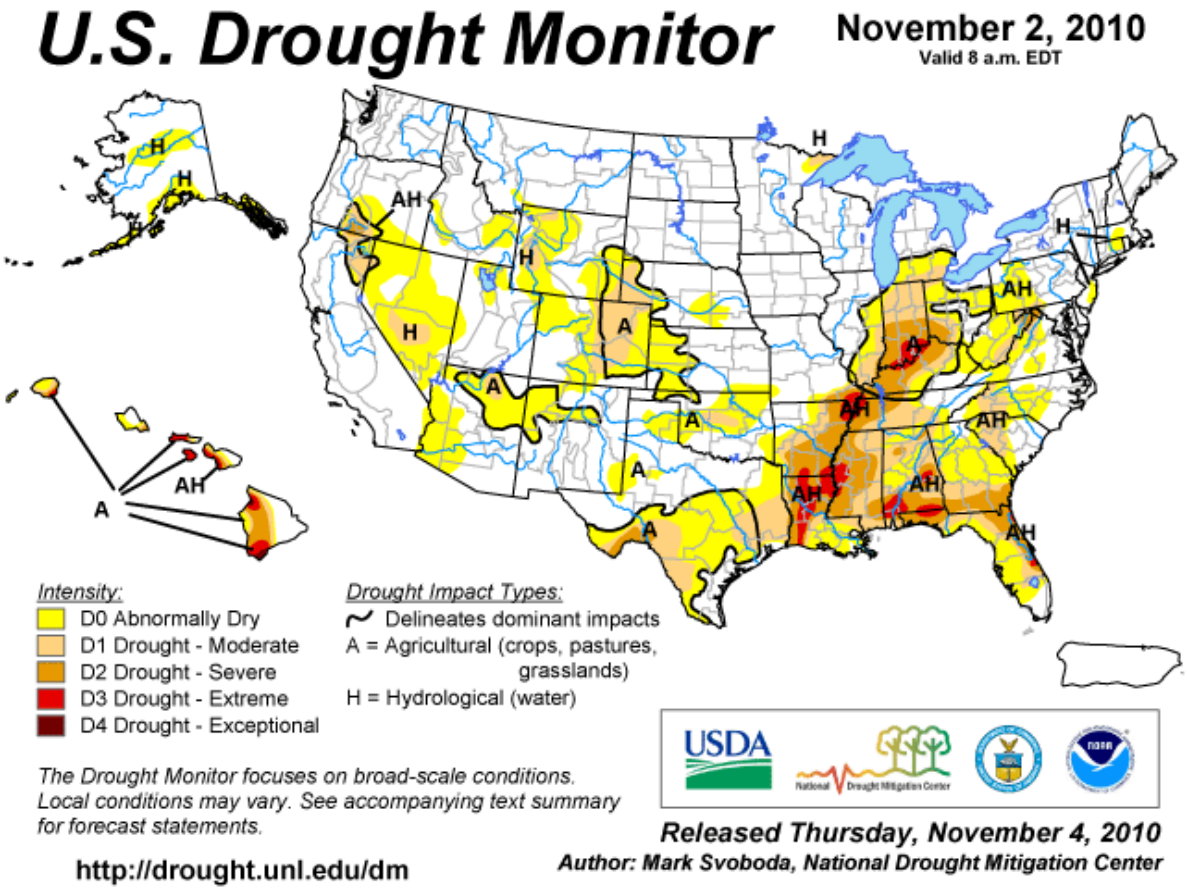
The outlook for this winter is for above normal temperatures in west Tennessee to slightly above normal temperatures in east Tennessee. Precipitation is forecast to be under the "Equal Chances" category. Equal chances does not mean that rainfall will be "normal" (another difficult term), but that there are no clear pointers to exactly what the precipitation will be, and that there are equal chances of being above normal, or below normal.

Now that we have adequately muddied the waters with equal chances, let's get back to what "normal" means. In weather terms, we calculate a "normal" every 10 years, based on a 30 year average. When we say the winter will have above normal temperatures, it is based on the entire winter, comparing it to that 30 year average.

When discussing averages, keep in mind that you can still have great extremes (both hot and cold, wet and dry) within that average. One winter that we like to keep in mind is the '92-'93 winter, specifically March of '93 when a major blizzard struck the region, paralyzing the area for nearly a week. That winter was forecast to be an equal chances winter, and overall was very "normal", but with and extreme deviation from what we would normally expect.



For more information contact the National Weather Service at (423) 586-3771 or e-mail Tim.Troutman@noaa.gov , regular mail 5974 Commerce Blvd; Morristown, TN 37814.



Drought

West and into middle Tennessee are expected to experience continued slightly below normal precipitation conditions, which should continue the D1 to D2 drought conditions into the upcoming winter. Southwest Virginia and Southwest North Carolina may slowly develop D0 to D1 drought conditions into the winter months. The overall forecast indicates that precipitation may be nearly normal throughout the winter.